

## TECHNOLOGY FACT SHEET

### **MSC-23781-1 Directional Microwave Applicator/Antenna (USPN 7,410,485)**

A directional, cylindrical antenna of ~0.095-in. (~2.4-mm) diameter has been developed for localized delivery of microwave radiation for heating (and thus killing) diseased tissue without excessively heating nearby healthy tissue. By "localized" is meant that the antenna radiates much more in one radial direction than in the opposite radial direction, so that it heats tissue much more on one side than it does on the opposite side. Prior compact, cylindrical antennas designed for therapeutic localized hyperthermia do not exhibit such directionality: that is, they radiate in approximately axisymmetric patterns. Prior directional antennas designed for the same purpose have been, variously, (1) too large to fit within catheters or (2) too large, after deployment from catheters, to fit within the confines of most human organs. In contrast, the present antenna offers a high degree of directionality and is compact enough to be useable as a catheter in some applications. The antenna design is a hybrid of monopole-antenna and transmission-line design elements.

#### **Benefits**

- Azimuthal directionality
- Limits thermal exposure to adjacent tissue
- Miniature in size

#### **Applications**

- Biomedical
- Endo Surgical Devices
- Benign Prostate Hyperplasia Treatment
- Atherosclerosis Treatment

#### **Patent**

JSC has received patent protection for this technology (USPN 7,410,485).

#### **Licensing and Partnering Opportunity**

This technology is being made available through JSC's Technology Transfer and Commercialization Office, which seeks to transfer technology into and out of NASA to benefit the space program and U.S. industry. NASA invites companies to consider licensing this technology for commercial applications.

#### **Contact Information**

If you would like more information about this technology or about NASA's technology transfer program, please contact:

Technology Transfer and Commercialization Office

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